Fig. 1

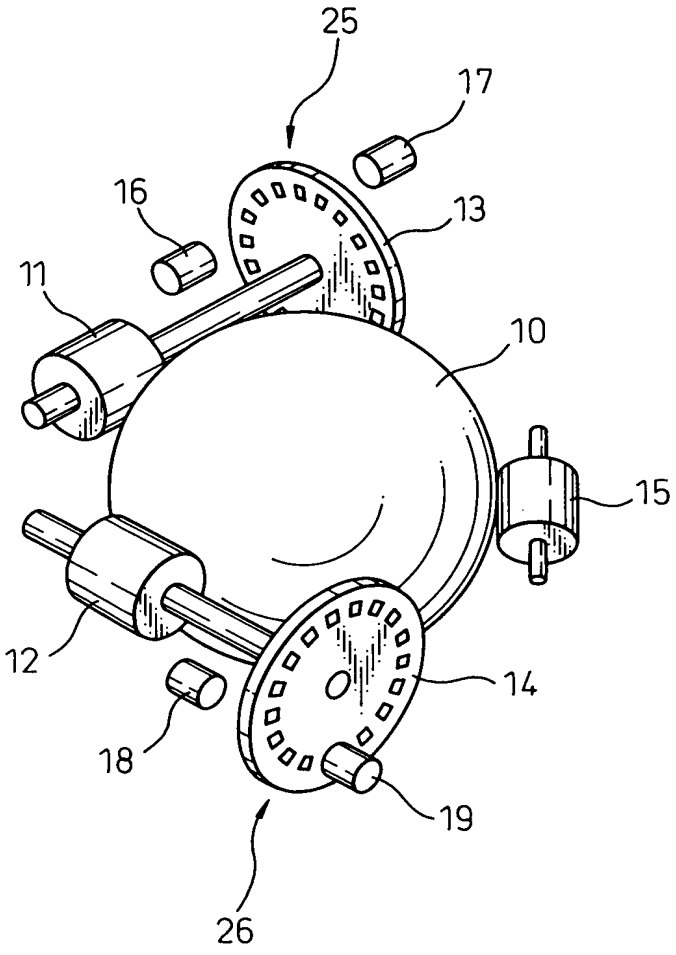


Fig. 2

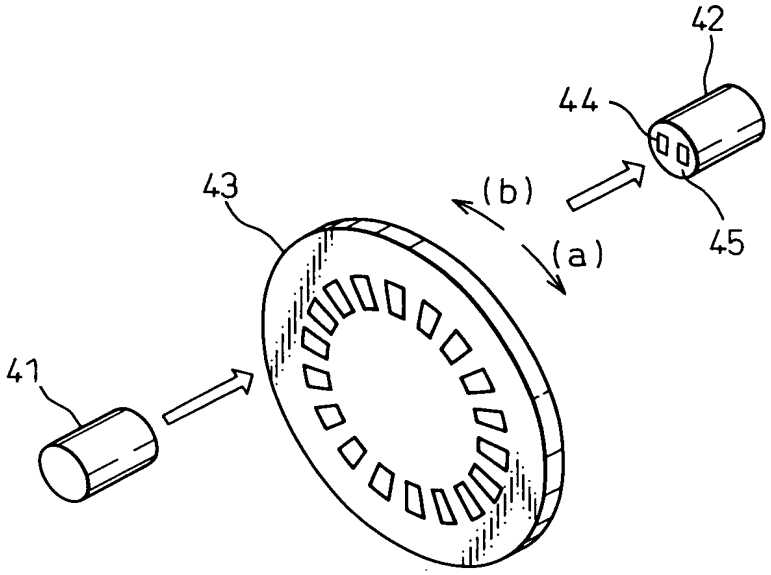


Fig. 3A

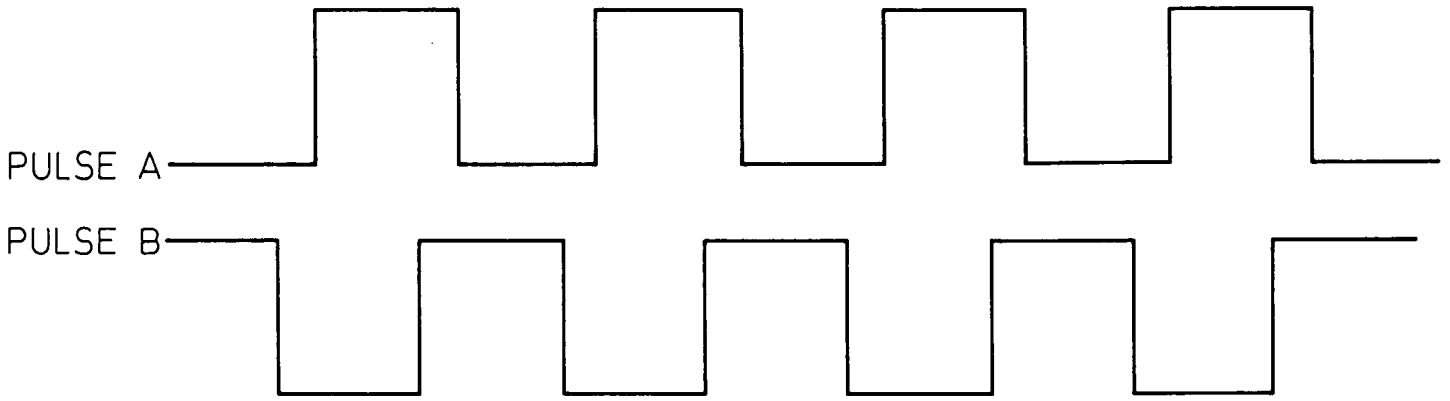
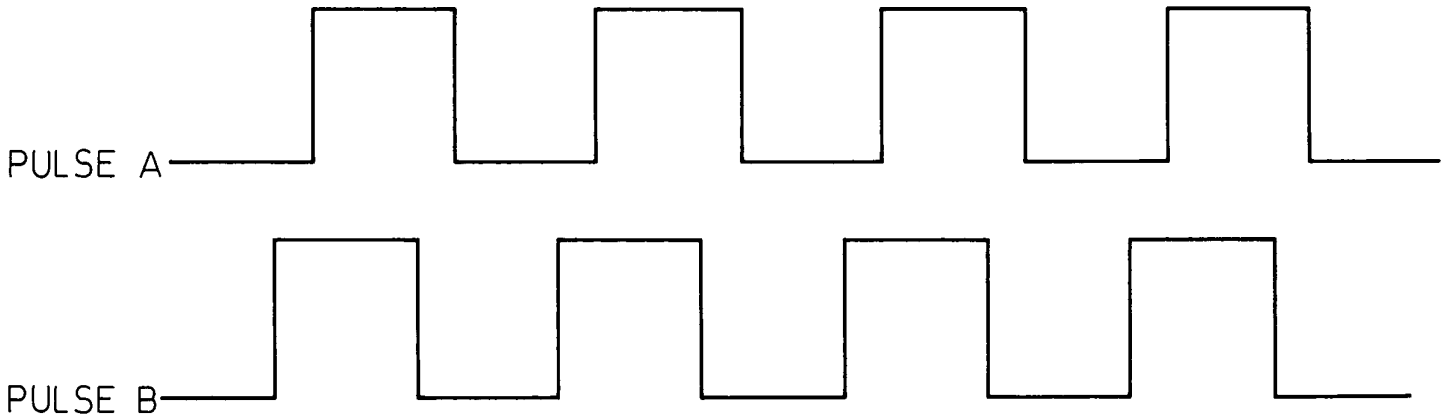


Fig. 3B



09478795 "0107DD

Fig. 4A

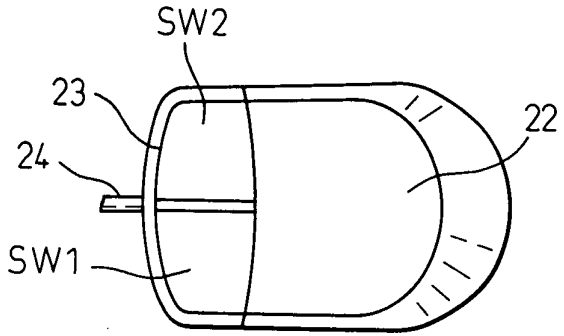


Fig. 4B

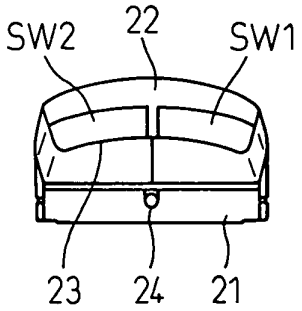


Fig. 4C

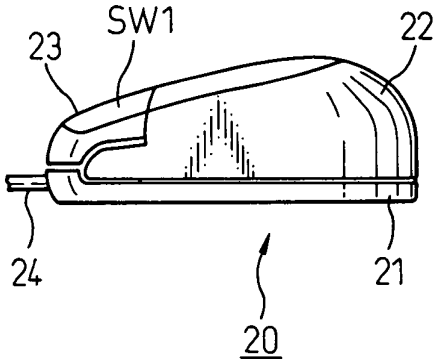


Fig. 4D

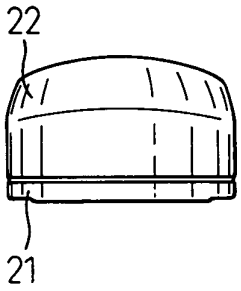


Fig.5

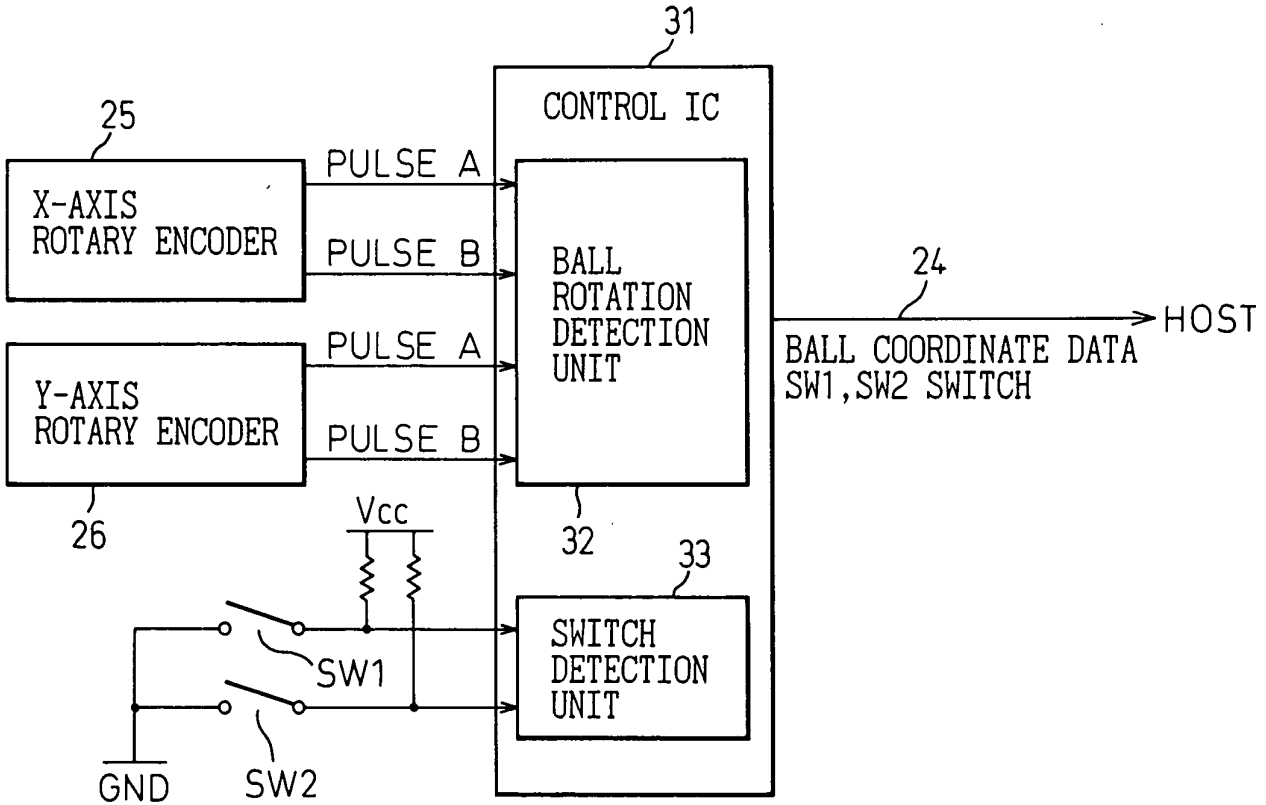

31
CONTROL IC
25
X-AXIS
ROTARY ENCODER
PULSE A
PULSE B
BALL
ROTATION
DETECTION
UNIT
24
HOST
BALL COORDINATE DATA
SW1,SW2 SWITCH
Y-AXIS
ROTARY ENCODER
PULSE A
PULSE B
26
32
Vcc
33
SWITCH
DETECTION
UNIT
SW1
GND
SW2

Fig. 6A

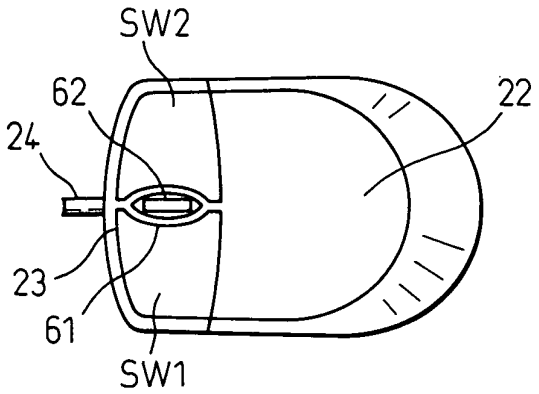


Fig. 6B

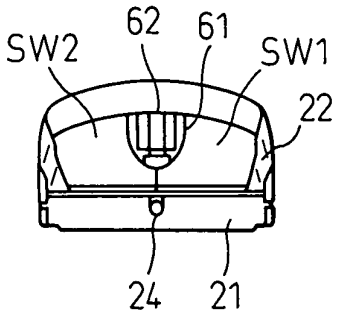


Fig. 6C

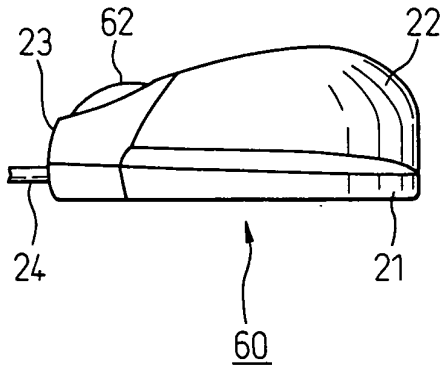


Fig. 6D

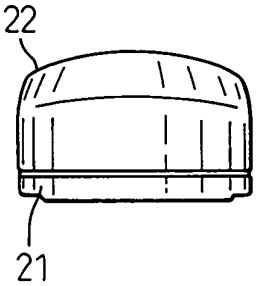


Fig. 7

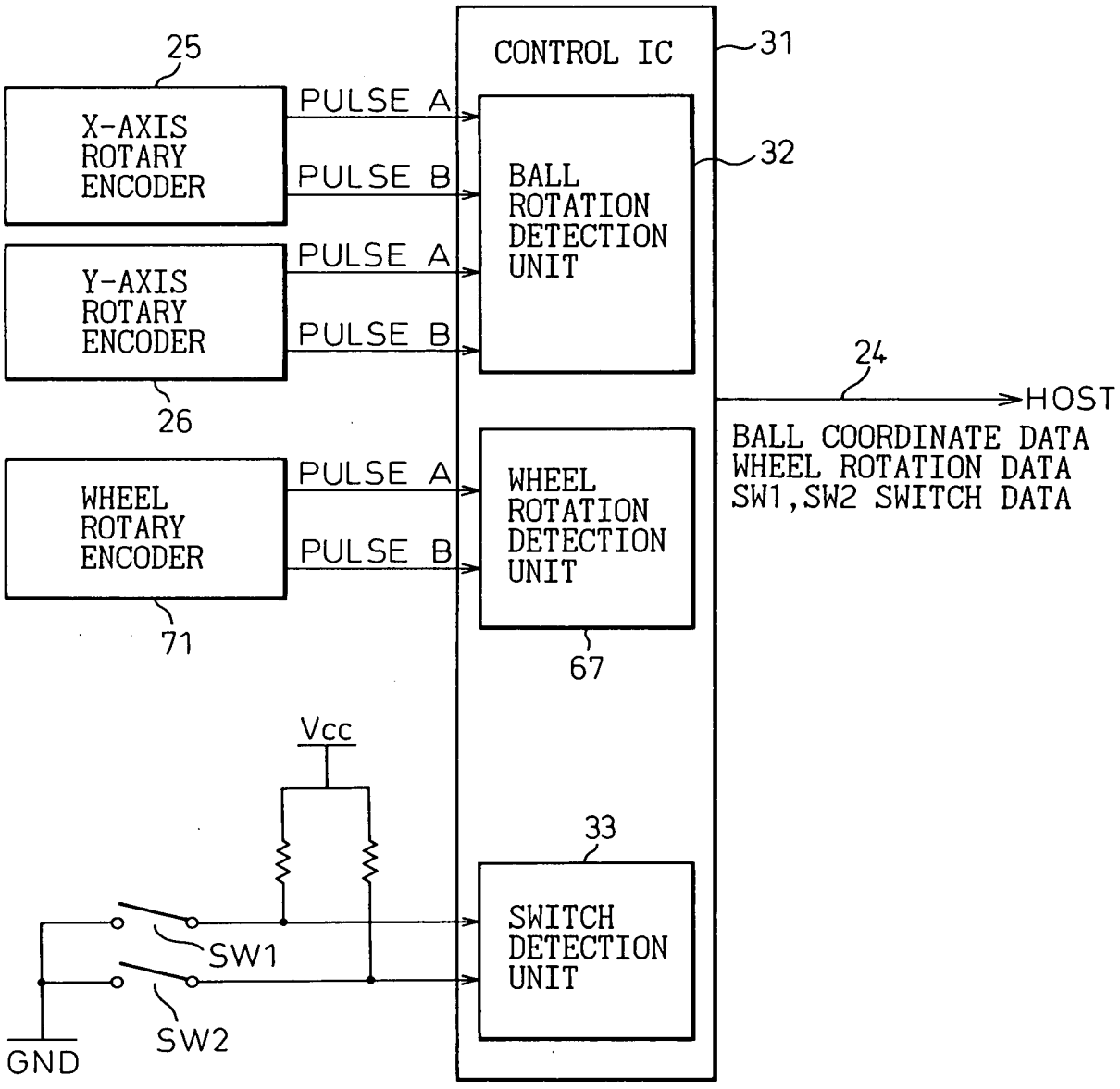

CONTROL IC
31
25
X-AXIS ROTARY ENCODER
PULSE A
PULSE B
Y-AXIS ROTARY ENCODER
PULSE A
PULSE B
26
BALL ROTATION DETECTION UNIT
32
24
HOST
BALL COORDINATE DATA
WHEEL ROTATION DATA
SW1,SW2 SWITCH DATA
WHEEL ROTARY ENCODER
PULSE A
PULSE B
71
WHEEL ROTATION DETECTION UNIT
67
Vcc
33
SWITCH DETECTION UNIT
SW1
SW2
GND

Fig. 8

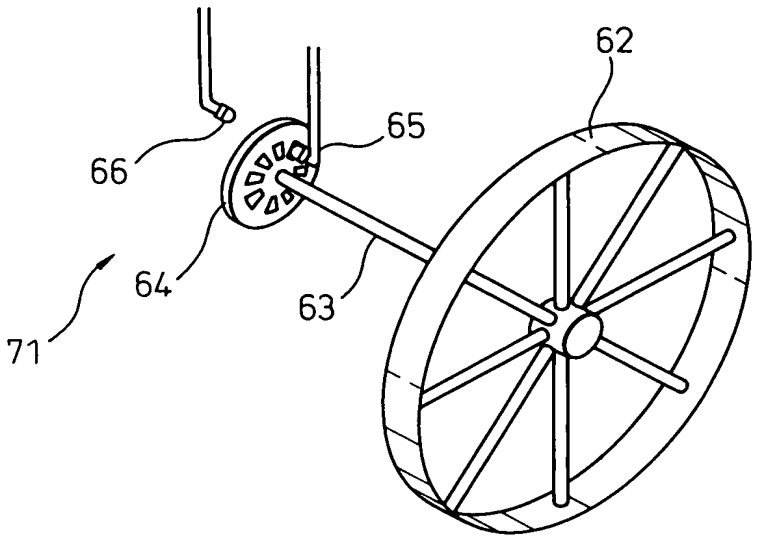


Fig. 9

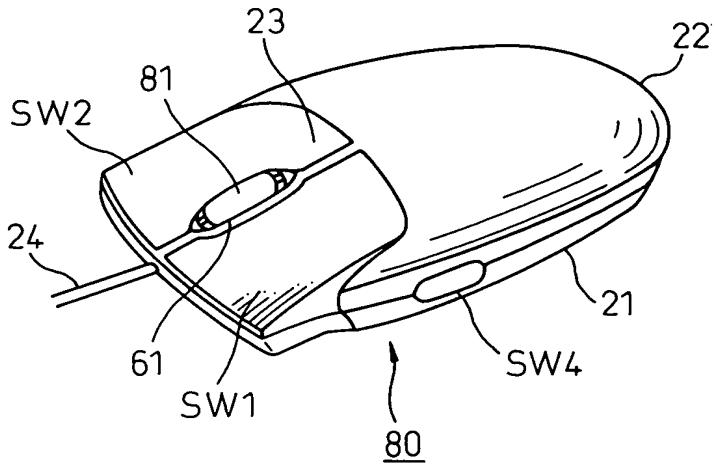


Fig. 10A

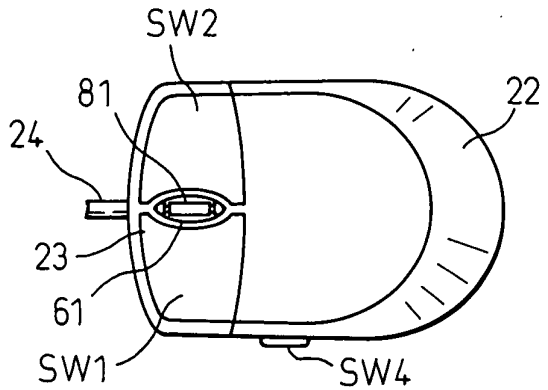


Fig. 10B

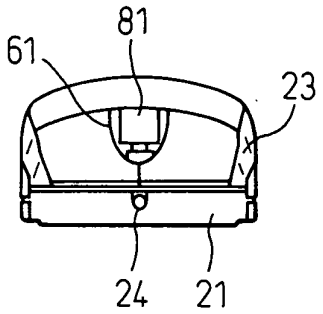


Fig. 10C

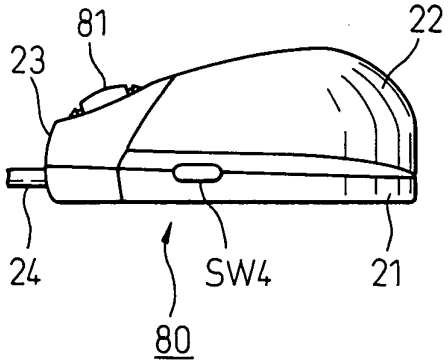


Fig. 10D

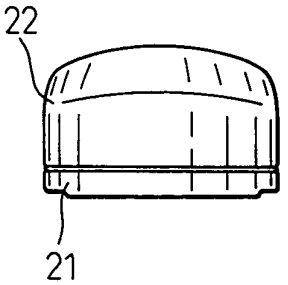


Fig. 11

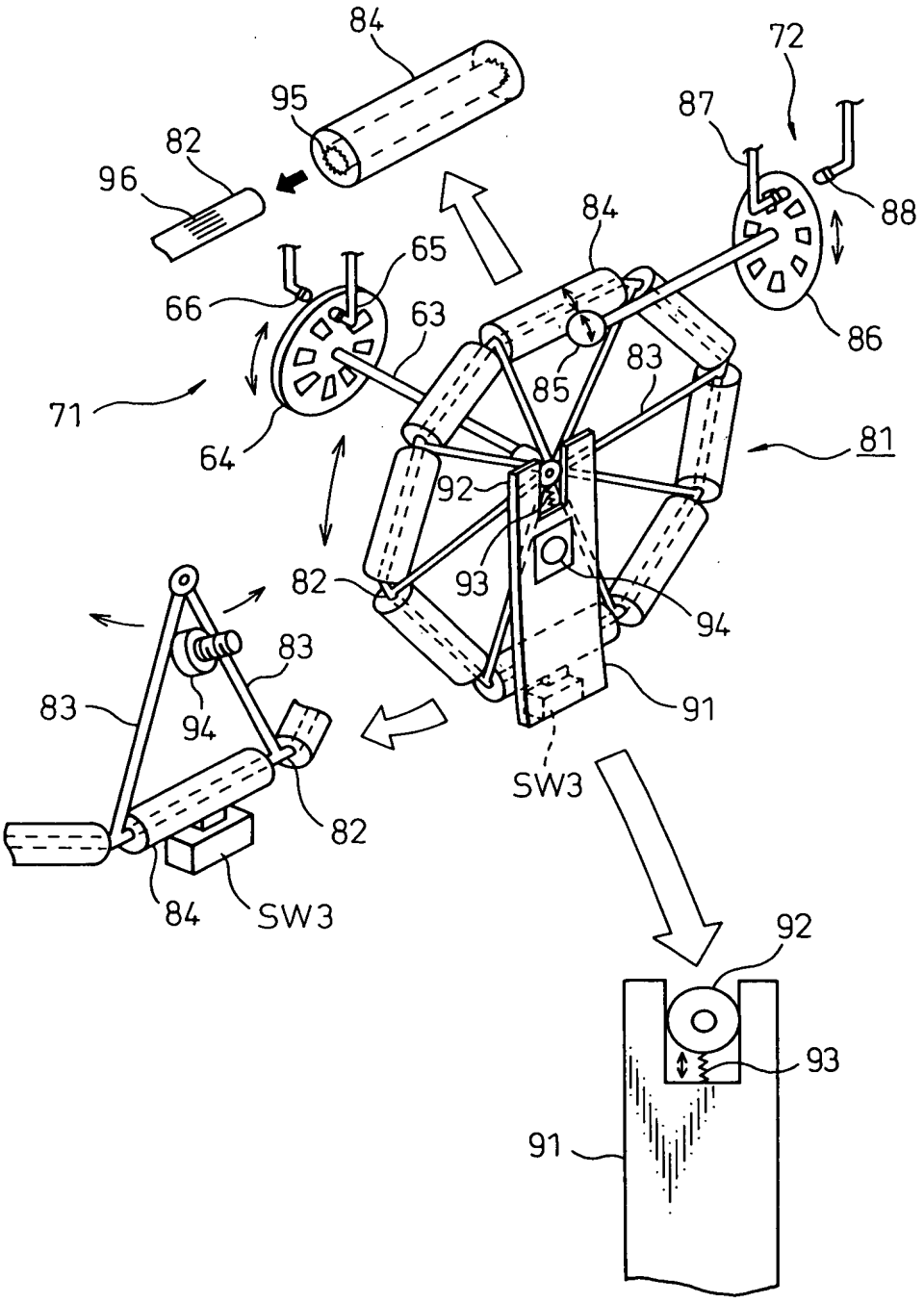
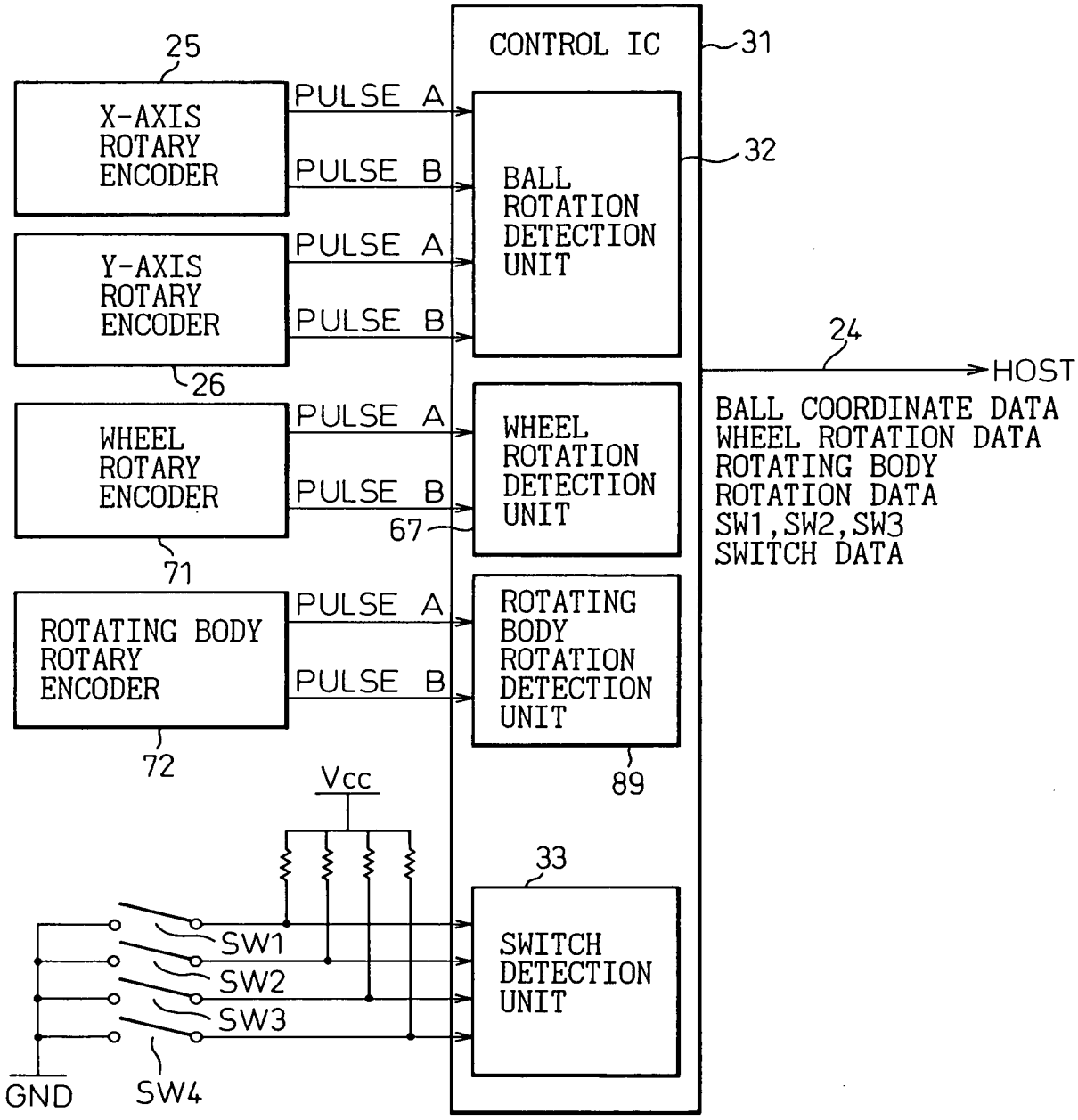

84
95
82
96
72
87
88
84
65
66
63
86
71
64
85
83
81
92
82
93
94
83
83
94
91
SW3
82
84
SW3
92
93
91

Fig. 12


CONTROL IC
31
25
X-AXIS ROTARY ENCODER
PULSE A
PULSE B
Y-AXIS ROTARY ENCODER
PULSE A
PULSE B
26
BALL ROTATION DETECTION UNIT
32
24
HOST
BALL COORDINATE DATA
WHEEL ROTATION DATA
ROTATING BODY ROTATION DATA
SW1, SW2, SW3 SWITCH DATA
WHEEL ROTARY ENCODER
PULSE A
PULSE B
67
71
WHEEL ROTATION DETECTION UNIT
ROTATING BODY ROTARY ENCODER
PULSE A
PULSE B
72
ROTATING BODY ROTATION DETECTION UNIT
89
Vcc
33
SW1
SW2
SW3
SW4
GND
SWITCH DETECTION UNIT

00/00150 95/94450

Fig. 13C

Fig. 13B

Fig. 13A

Fig. 14

	FIRST BYTE	SECOND BYTE	THIRD BYTE	FOURTH BYTE	FIFTH BYTE
SW4 OFF NORMAL OUTPUT DATA	SW1, SW2, SW3 SWITCH DATA	BALL X-DIRECTION ROTATION DATA	BALL Y-DIRECTION ROTATION ENCODER	ROTATING BODY ROTATION DATA	WHEEL ROTATION DATA
SW4 ON OUTPUT DATA WITH SW4 BEING DEPRESSED	SW1, SW2, SW3 SWITCH DATA	ROTATING BODY ROTATION DATA	WHEEL ROTATION DATA	0	0

Fig. 15

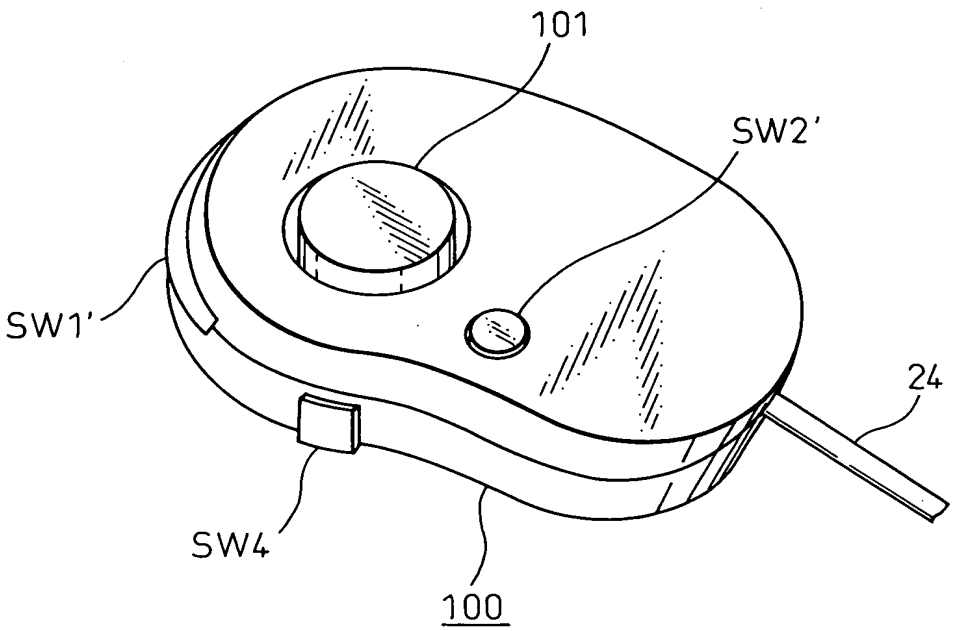


Fig.16

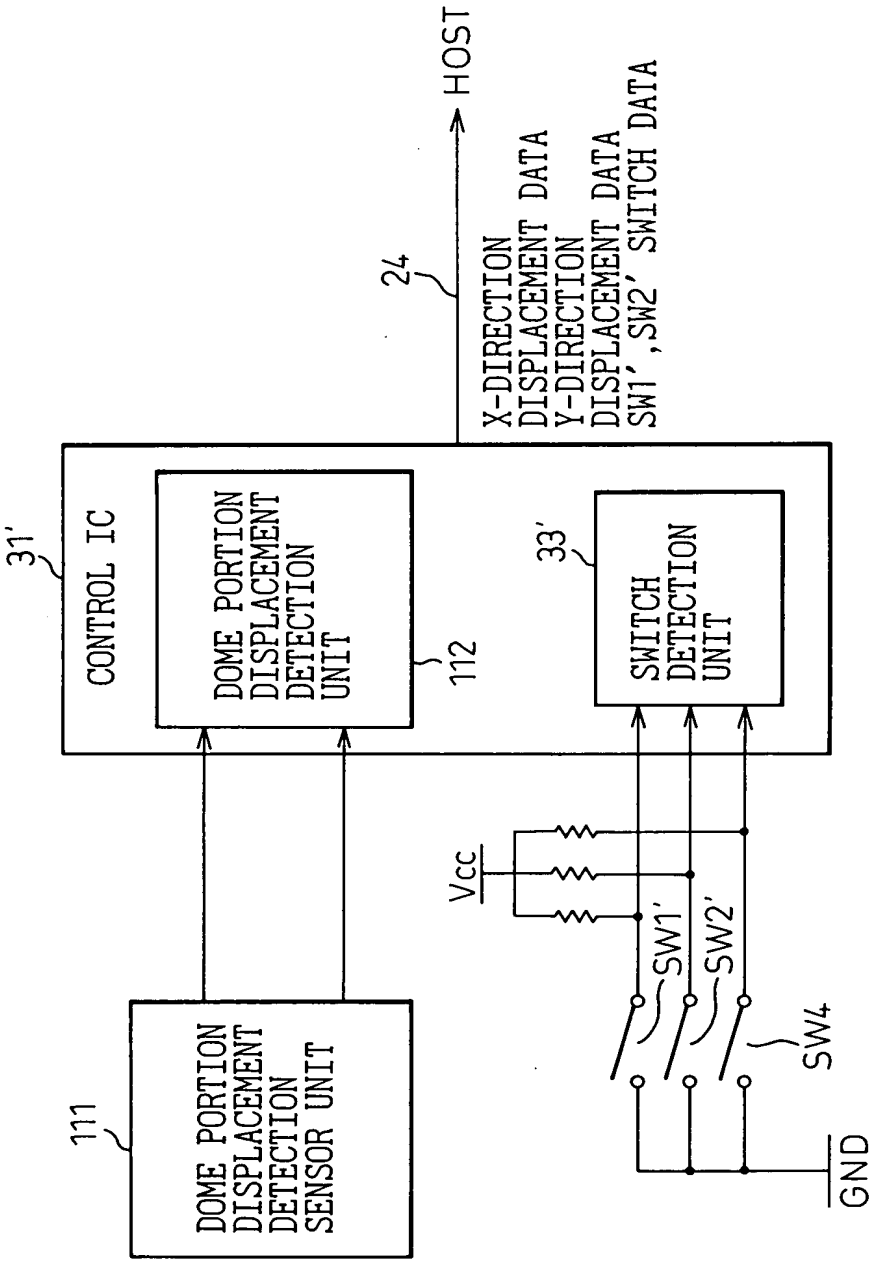
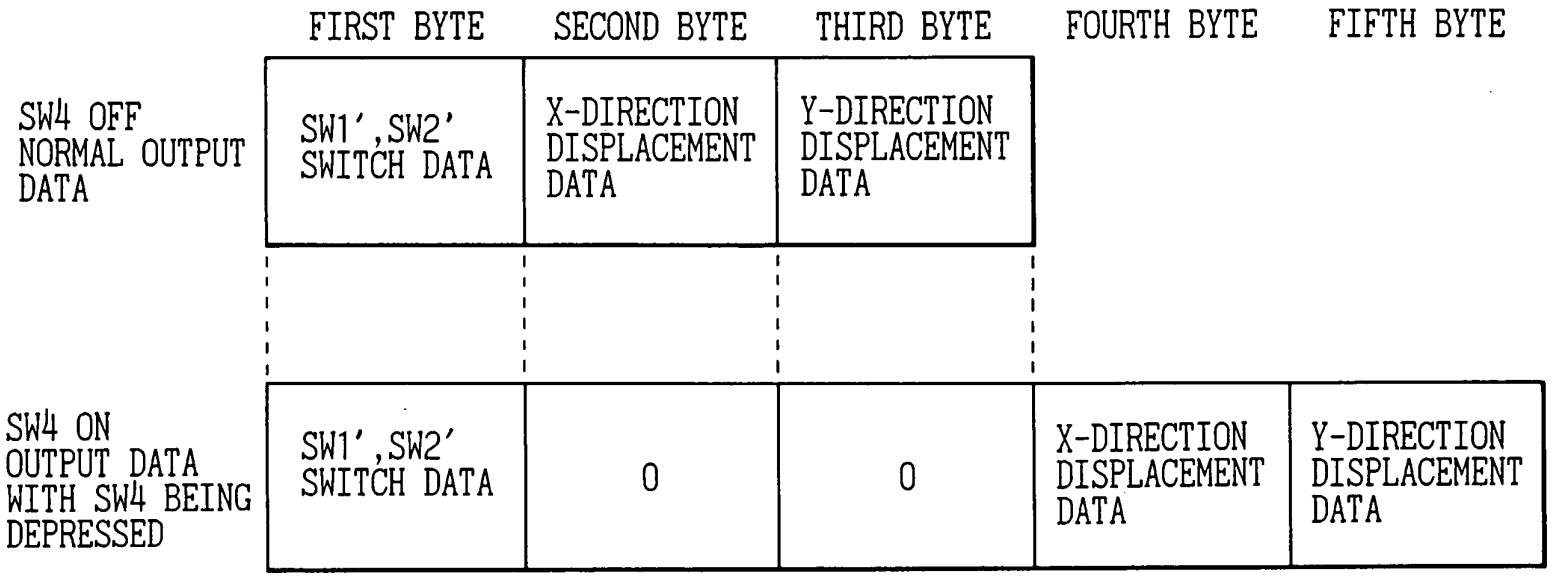

HOST
24
X-DIRECTION DISPLACEMENT DATA
Y-DIRECTION DISPLACEMENT DATA
SW1', SW2' SWITCH DATA
31'
CONTROL IC
DOME PORTION DISPLACEMENT DETECTION UNIT
112
33'
SWITCH DETECTION UNIT
111
DOME PORTION DISPLACEMENT DETECTION SENSOR UNIT
Vcc
SW1'
SW2'
SW4
GND

Fig.17


FIRST BYTE
SECOND BYTE
THIRD BYTE
FOURTH BYTE
FIFTH BYTE
SW4 OFF NORMAL OUTPUT DATA
SW1',SW2' SWITCH DATA
X-DIRECTION DISPLACEMENT DATA
Y-DIRECTION DISPLACEMENT DATA
SW4 ON OUTPUT DATA WITH SW4 BEING DEPRESSED
SW1',SW2' SWITCH DATA
0
0
X-DIRECTION DISPLACEMENT DATA
Y-DIRECTION DISPLACEMENT DATA